14. Junctions 18 are formed where the vertical wires 12 and the horizontal wires 14 cross. Distinct electrical nets (one indicated by dashed lines 46, one indicated by heavy solid lines 48, and one indicated by dotted lines 50) may be created in the crossbar 44 as part of an integrated circuit. These separate circuits 46, 48, 50 can cross each other without being electrically connected where a crossbar switch is open, denoted 52 (not conducting current). Alternatively, horizontal and vertical wires may be electrically connected by switches that are closed, denoted 54, 56, 58, 60, 62. Circuits may be confined to segments of horizontal or vertical crossbar wires by controlled oxidation of a nanowire to make an electrically open switch, denoted 64, 66, 68, 70, 72, 74, 76, 78. By using the voltage across the electrochemical cell formed by each pair of crossed nanowires to make and break electrical connections both along wires in a layer (segmented wires) and between wires in two layers (vias), one can create an integrated circuit of arbitrarily complex topology. The wires may connect to an electronic device (e.g., resonant tunneling diode or transistor) (not shown) external to the crossbar array 44. Alternatively two or more nets, e.g., 46, 48 may connect to an electronic device 80 (e.g., resonant tunneling diode or transistor) internal to the crossbar array 44. The electronic device, whether external or internal 80, may comprise a transistor 32, 38 of the present invention.--

IN THE CLAIMS:

Please amend Claim 27 as follows:

27. (Once Amended) The method of Claim 16 wherein said second wire also comprises a semiconductor material and wherein both said semiconductor wires are provided with functional groups, one said wire being provided with Lewis acid functional groups and the other said wire being provided with Lewis base functional groups.

REMARKS

Claims 16-30 remain in the application. Claim 27 is amended to provide antecedent basis for "both semiconductor wires".

The specification is amended to update the status of several related patent applications that are pending in the U.S. PTO.